UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

February 14, 2019

Mr. Daniel Johnson
Vice President - General Manager
Florence Copper, Inc.
1575 W. Hunt Highway
Florence, Arizona 85132

RE: Approval of the Replacement Plan for Well M57 and Testing Procedures for the PTF UIC Permit No. R9UIC-AZ3-FY11-1
Florence Copper Project, Florence, Arizona

Dear Mr. Johnson:

We reviewed the proposed Replacement Plan for Well M57 and Temperature Logging, and Radioactive Tracer Survey testing procedures submitted on January 14, 18 and 21, 2019 to be performed at the Production Test Facility (PTF) at the Florence Copper Project site, Florence, Arizona. This letter provides formal approval of the proposed procedures as outlined in your letter, with the enclosed comments. You may proceed with the work after submittal of the amended procedures and clarifications to address the comments.

EPA provided comments on the Temperature Logging Procedures in the January 31, 2019 approval letter for conducting temperature logging on Wells R-07 and R-08. The same comments apply to R-09 temperature logging. Please submit results to EPA of each test within thirty (30) days of its completion.

If you have any questions or wish to discuss this further, please do not hesitate to call me at (415) 972-3971 or contact Nancy Rumrill of my staff at (415) 972-3293.

Sincerely,

David Albright
Manager, Drinking Water Protection Section

Enclosure
cc (via email): Maribeth Greenslade, ADEQ

Comments on the Florence Copper MIT and Well Construction and Abandonment Procedures Submitted in January 2019

Temperature Logging Procedures

1. The recovery wells should be shut in for at least 12 hours before temperature logging begins.

2. Injection wells should remain active and the recovery to injection rates should be maintained at a ratio of 110 percent while maintaining an inward gradient at the recovery wells to maintain hydraulic control during temperature logging of PTF wells. Hydraulic control should be maintained during logging of injection and recovery wells by adjusting injection rates and/or recovery rates in the active PTF wells.

3. In step 2 of the procedure, the temperature log should be recorded on a horizontal scale of 1-degree Fahrenheit per inch in addition to 5 degrees Fahrenheit per inch. A differential temperature track should be added to the final log.

4. The original temperature survey run in each well should also be plotted on the log in Fahrenheit degrees for comparison with the post-injection surveys and MIT evaluation.

RAT Survey Procedures

For clarification purposes:

1. The log pass for the injectivity profile should be conducted with the well injecting at the normal operating pressure and at a stabilized injection rate.

2. The time drive and depth drive logging should be conducted at the maximum allowable injection pressure, if possible, but at no less than the normal operating pressure.

3. The post-tracer gamma ray log should duplicate the logging speed, gain, depth setting and operating conditions applied for the pre-tracer baseline gamma ray log.

4. The preferred depth scale is 5 inches per 100 feet; however at least one of the scales presented should correspond to the reference log depth scale.

5. The operator should provide analytical interpretation of the logging results and a written description of the procedure, including the methodology used to calculate the wait-time, and conclusions drawn from the survey.

General

The operator should refer to the following publication for additional information and guidance on running and interpreting RAT surveys and temperature logs for evaluation of injection well integrity: Dr. R.M. McKinley's publication EPA/600R-94/124, Temperature, Radioactive Tracer, and Noise Logging for Injection Well Integrity.

M-57-O Well Abandonment and Construction Procedures

Well Abandonment

The well abandonment procedures are acceptable as presented by FCI, except the signatures and dates are missing from EPA Form 7520-14, Plugging and Abandonment Plan.

Well Construction

Section 3.3, Well Casing Installation

Casing centralizers will be installed and secured to the well casing and screen at 40-foot intervals, but are not shown in Figure A of Appendix A, as stated in Section 3.3. *Figure A should be revised to show the centralizer locations on the casing and screen intervals.*

Section 3.6, Mechanical Integrity Demonstration

For clarification, running temperature, gamma ray, cement bond logs, and other logs over the length of the steel casing should be specified here.

Final Well Construction Report and Completion of Construction Notice

FCI should comply with well construction reporting and notice of completion of construction requirements for the M-57-O-R well as specified at Part II.C.9 of the permit.

Monitoring Program

Water quality standards and baseline measurement methods should be followed for the M-57-O-R monitoring well consistent with the procedures specified in Part II.F of the permit and approved for the other monitoring wells.